

Prevalence of stressful life events among women in Kurdistan Region: a Cross-Sectional Study

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<https://10.33899/mjn.2025.189974>

Received: November 01, 2024; Revised: March 14, 2025; Accepted: July 01, 2025

Abstract

Background: Stimulus is a prevalent phenomenon that impacts individuals from diverse backgrounds. The primary objective of this study is to utilize the Holmes and Rahe Stress Scale in order to ascertain the prevalence of the ten most distressing life events among Iranian women. It acknowledges that tension inherently catalyzes surmounting obstacles.

Aim: The objective of this study is to examine the correlation between stressful life event perceptions among Kurdish women and a range of demographic and obstetrical factors.

Methods: A cross-sectional study was conducted in which 1,781 women residing in Kurdistan participated from February to October 2023. The degree of tension experienced by the respondents was quantified utilizing a modified version of the Life Change Index Scale. In order to conduct the analysis, logistic regression and chi-squared tests were implemented.

Results: The findings revealed that an overwhelming majority of women (91.2%) had experienced at least one traumatic event in their lifetime, with 26.6% experiencing two such incidents within the past year. Matrimony (30.8%), personal injury or illness (68.3%), and the demise of a close relative (38.4%) emerged as the most prevalent events. Logistic regression identified several factors that were associated with increased stress ratings: advanced age, lower level of education, rural residence, non-nuclear family structure, prior greater multiparity, gynecological disorders, and divorce.

Conclusions: Several factors were found to influence stress scores, including but not limited to marital status, parity, gynecological concerns, educational attainment, placement, and family composition. An optimistic outlook exists regarding the potential of public education to reduce tension and stimulate counselling utilization, particularly among the female population.

Keywords *Stressful Life Events; Social Readjustment Rating Scale; Kurdistan; Prevalence; Ordinal Logistic Regression.*

Introduction

Stress is a normal human reaction that motivates people to deal with problems and dangers in their lives (Vincze & Vincze, 2022). Although everyone encounters periods of stress, how individuals effectively manage stress significantly influences their life satisfaction and overall well-being (Tibubos et al., 2021).

Stressful life events (SLEs), also known as stressors, encompass detrimental or threatening occurrences in an individual's life, such as unemployment, the loss of a loved one, or the diagnosis of a severe illness (Cohen et al., 2021). These events are prevalent, affecting 30–40% of the general population who report experiencing at least one major SLE in the past year (Moya-Higueras et al., 2021). According to Holmes and Rahe, significant life events—whether positive or negative—are inherently linked to stress. Their model suggests that major events, such as the marriage of a close friend or the loss of a loved one, contribute to an individual's overall stress experience (Holmes & Rahe, 1967). Furthermore, SLEs have been associated with an increased risk of various health conditions, including mental illnesses, coronary heart disease, and infectious diseases (Cohen et al., 2021). Stress can arise from various sources, such as housing affordability and job insecurity to family health concerns, relationships, finances, work demands, economic conditions, and personal safety (Yaribeygi et al., 2017). Stress responses vary, as different stressors impact individuals in unique ways. However, chronic stress poses serious health risks, including digestive issues, inflammation, impaired immunity, sleep disturbances, anxiety, and sexual dysfunction (Yaribeygi et al., 2017). The impact of stressful life events (SLEs) on mental health is well-documented, increasing the risks for depression, anxiety, and post-traumatic stress disorder (PTSD) (Seok et al., 2020; Assari & Lankarani, 2016; El-Khodary & Samara., 2018).

In the Middle East and North Africa (MENA) region, stress prevalence is high, with 35% of respondents reporting regular stress. Iraqis (49%) and Tunisians (53%) experience the highest levels, with 29% of individuals reporting depression and Iraq having the highest prevalence (43%), likely due to ongoing conflicts (Thomas, 2019). A 2021 survey further highlighted increasing mental health burdens in the region, with reported cases of past mental health illnesses rising from 8% to 10%. (Gharibian & McCarty-Caplan, 2023). Additionally, a study by the Iraqi Ministry of Health revealed significant psychological distress in the population (Ahmed, 2022). Existing research strongly supports gender differences in responses to stressful life situations. A recent Iraqi study indicated that females exhibit a higher susceptibility to posttraumatic stress disorders compared to males (AlShawi, 2018).

A study in Erbil, Kurdistan Region, examined the impact of SLEs on generalized anxiety disorder (GAD), revealing those females (2.3:1) were more vulnerable to PTSD than males. Financial instability (34%) and occupational problems (26%) were the most common stressors, while parenting (35%) and interpersonal issues (27%) were the leading stressors among women. Additionally, 37% of patients experienced two SLEs, 25.2% faced three, and only 2.4% reported no SLEs in the past year (Taher et al., 2015).

Political unrest, conflict, and forced migration have increased the risk of SLEs among women in the Kurdistan Region of Iraq. Coping is often influenced by societal pressures, economic disparities, gender norms, and access to support, leading to anxiety and depression (Lafta & Merza, 2021; Rometsch-Ogioun et al., 2018).

Given the limited research on SLEs in this population, this study examines their prevalence, types, and associations with sociodemographic and obstetrical factors to address this gap and provide insights into underlying causes.

Methodology

Design of the Study

A cross-sectional study was conducted to estimate the prevalence of stressful life events among women in the Kurdistan Region of Iraq. The study was carried out in three provinces—Sulaymaniyah, Erbil, and Duhok—from February 2023 to October 2023.

Administrative Approval

Before data collection, ethical approval was obtained from the Scientific and Ethics Committee of Erbil Polytechnic University, along with permission from health and government authorities. The study's purpose was explained to participants, who provided signed informed consent with the option to withdraw at any time. To ensure confidentiality, all forms were anonymized and assigned unique codes before analysis.

The Study's Setting

The study was carried out in community health centers and selected public areas across the three provinces of the Kurdistan Region (Sulaymaniyah, Erbil, and Duhok), representing a mixture of urban and rural environments.

The Study Sample

A total of 1781 women were recruited using a non-probability convenient sampling method. The sample included Kurdish women aged 20 to 60 years who were willing to participate and met the inclusion criteria.

Criteria for Inclusion and Exclusion

Inclusion criteria comprised Kurdish women aged between 20 and 60 years, residing in the Kurdistan Region, and willing to participate voluntarily. Women with diagnosed psychiatric disorders or those unable to be interviewed were excluded from the study.

Instruments of the Study

Data was collected through a structured self-reported questionnaire consisting of three main parts. The first section gathered demographic and obstetrical data, including age, marriage age, education, marital status, employment, residency, and family type. The second focused on reproductive health, covering gravida, parity, abortion, first pregnancy age, and gynecological issues. The third assessed stressful life events (SLEs) using the Life Change Index Scale (Holmes & Rahe), which lists 43

common SLEs experienced in the past year, ranging from positive (e.g., marriage, job change) to negative events (e.g., divorce, loss of a loved one, financial difficulties (Bogulski et al., 2015).

Measurement of SLEs

Participants selected the ten most impactful stressful life events (SLEs) from a standardized list of 43 items, Participants selected the 10 most impactful SLEs from a list of 43 events, including the death of a spouse, divorce, marital separation, jail term, death of a close family member, personal injury or illness, marriage, fired at work, marital reconciliation, and retirement. The Social Readjustment Rating Scale (SRRS) was used to assign scores based on perceived stress impact. A total SRRS score was calculated over 12 months, with higher scores indicating greater stress risk (<150 = 30%, 150–299 = 50%, >300 = 80%). The SRRS score categories indicate a person's likelihood of suffering from stress (Wallace et al., 2023).

Validity of study

The Holmes and Rahe (1967) validation study found a positive correlation (+0.118) between life change scores and the likelihood of stress-related illness. The scale's reliability has also been confirmed, showing consistent rank ordering among healthy adults and patients, with high reliability coefficients ($r = 0.96-0.89$ for healthy adults and $r = 0.91-0.70$ for patients) (Holmes & Rahe, 1967; Wallace et al., 2023).

Statistical Analysis of the study sample

Data was analyzed using IBM SPSS Statistics (version 27). Descriptive statistics and ordinal logistic regression were employed to examine associations between sociodemographic and obstetrical factors and the prevalence and scores of SLEs

Results

Table 1. Socio-demographic characteristic of the study sample (n=1781)

Variables		No.	%
Age groups	Less than 40	653	36.7
	40 - 45	206	11.6
	More than 45	922	51.8
(45.80±9.914)			
Age at marriage	Less than 20	771	43.3
	20 - 37	1010	56.7
(19.32±5.830)			
Level of Education	Illiterate	505	28.4
	Primary	384	21.6
	Intermediate and Secondary	497	27.9
	Higher education	395	22.2
Occupation of women	Housewife	1243	69.8
	Employed	460	25.8
	Self-Employed	60	3.4
	Retired	18	1.0
Residency	Urban	1239	69.6
	Suburban	415	23.3
	Rural	127	7.1
Province	Erbil	831	46.7
	Sulaymaniyah	341	19.1
	Duhok	609	34.2
Family type	Nuclear	1342	75.4
	Extended	439	24.6

Marital status	Married	1301	73.05
	Unmarried	110	6.18
	Widow	325	18.25
	Divorced	45	2.52

The study included 1,781 women, aged 20 to 60 years, with a mean age of 45.80 ± 9.91 years. The majority (56.7%) married between 20 and 37 years, with a mean marriage age of 19.32 ± 5.83 years. Educational levels varied, with 28.4% illiterate and 22.2% holding a university degree. Most participants (69.6%) were housewives and resided in urban areas (69.8%). In terms of geographic distribution, the largest proportion was from Erbil (46.7%), followed by Duhok (34.2%) and Sulaymaniyah (19.1%). Family structure analysis showed that 75.4% lived in nuclear families, and 73.05% were married, as detailed in Table 1.

Table 2. Obstetrical history of the study sample (1781)

Variables	No.	%	
Gravida	Nulligravida	183	10.3
	Primigravida	102	5.7
	Multigravida	758	42.6
	Grand multigravida	738	41.4
Para	Nulliparous	211	11.8
	Primiparous	184	10.3
	Multiparous	830	46.6
	Grand multipara	556	31.2
Abortion	0	1060	59.5
	1-3	677	38.0
	4 and more	44	2.5
Age at first pregnancy	Less than 20	617	34.6
	20-34	1150	64.6
	35 and more	14	.8

(20.23±7.982)			
Gynecological problem	Yes	197	11.1
	No	1584	88.9

Table 2 shows that 42.6% of respondents were multigravida, with 46.6% being multiparous. Additionally, 40.5% had experienced at least one abortion. The mean age at first pregnancy was 20.23 ± 7.98 years, with over 64% having their first pregnancy between 20 and 34 years. Notably, 88.9% of participants reported no gynecological problems.

Table 3. Prevalence of the most ten SLEs of the study sample.

Variable	No.	%
Not have any stressful life events	175	9.8
Death of spouse	113	6.3
Divorce	43	2.4
Marital separation	133	7.4
Imprisonment	98	5.5
Death of a close family member	684	38.4
Personal injury or illness	1097	68.3
Marriage	549	30.8
Dismissal from work	215	12.1
Marital reconciliation	109	6.1
Retirement	71	4.4
Death of a spouse & Personal injury or illness	96	5.4
Imprisonment & Dismissal from work	45	2.5
Death of a close family member & Personal injury or illness	34	2.1
Death of spouse & Marital separation & Personal injury or illness	97	6.0
Death of spouse & Imprisonment & Dismissal from work	28	1.7
Death of spouse & Death of a close family member & Personal injury or illness	69	4.3
Death of spouse & Marital separation & Imprisonment & Death of a close family	11	0.7

member & Personal injury or illness

Death of spouse & Imprisonment& Death of a close family member & Personal injury or illness & Dismissal from work 15 0.9

Table 3 presents the frequency distribution of SRRS items. The majority (91.2%) of women reported experiencing at least one SLE, while 26.6% faced two or more in the past year. The most commonly reported events were personal injury or illness (68.3%), death of a close family member (38.4%), and marriage (30.8%). Other notable SLEs included dismissal from work (12.1%), marital separation (7.4%), death of a spouse (6.3%), marital reconciliation (6.1%), imprisonment (5.5%), retirement (4.4%), and divorce (2.4%).

Table 4. Likelihood of illness in near future (stressful life) of the study sample.

Stressful events of life (Likelihood of Illness in Near Future (stressful life))			
variable		No.	%
	No stressful life (0)	175	9.8
Total score groups	about 30 percent stress (<150)	322	18.1
	about 50 percent stress (150-299)	739	41.5
	about 80 percent stress (>300)	545	30.6

Table 4, based on the Holmes-Rahe statistical prediction model, illustrates the likelihood of illness according to SRRS scores, where higher scores indicate a greater risk [18]. In this study, 30.6% of women had SRRS scores above 300, placing them at an 80% risk of developing physical, mental, or spiritual difficulties. Additionally, 41.5% scored between 150 and 299, facing a 50% risk of serious health issues, while 28.0% had scores below 150, with a 30% likelihood of stress-related disorders.

Table 5. Results of ordinal logistic model for SRRS score (stressful life events)

Variables	Coefficient	P-value	OR	95% CI
Age	0.035	<0.001	1.036	[1.025,1.047]
Educational Level				
Illiterate	0.018	0.918	1.018	[0.724, 1.432]
Primary	0.539	0.002	1.714	[1.222, 2.403]
Intermediate and Secondary	0.377	0.011	1.459	[1.092, 1.948]
Higher education (Ref)				
Occupation				
Housewife	-0.529	0.234	0.589	[0.246, 1.409]
Employed	-0.089	0.843	0.915	[0.378, 2.216]
Self-Employed	0.183	0.720	1.201	[0.442, 3.263]
Retired (Ref)				
Residency				
Urban	-0.426	0.029	0.653	[0.446, 0.957]
Suburban	-1.000	<0.001	0.368	[0.242, 0.558]
Rural (Ref)				
Family type				
[1: Nuclear; 2: extended]	0.299	0.011	1.348	[1.070, 1.699]
Marital status				
Married	-0.748	0.020	0.473	[0.252, 0.890]
Unmarried	-1.341	0.005	0.262	[0.103, 0.665]
Widow	-0.358	0.322	0.699	[0.345, 1.419]

Divorced (Ref)

Para groups

Nulliparous	-0.656	0.001	0.519	[0.347, 0.777]
Primiparous	-0.833	<0.001	0.435	[0.305, 0.618]
Multiparous	0.232	0.050	1.261	[1.000, 1.589]

Grand Multipara (Ref)

Gynecological Problem

[1: Yes; 2: No]	0.471	0.001	1.601	[1.209, 2.121]
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Table 5 presents the ordinal logit model findings for SRRS scores. The model significantly predicted the outcome variable (Chi-Square = 366.034, $p < .001$) with a -2 Log Likelihood of 3448.817. Goodness-of-fit tests indicated an adequate model fit, with non-significant Pearson (Chi-Square = 3367.118, $p = .318$) and Deviance (Chi-Square = 3408.039, $p = .166$) values. Age, education, residency, family type, marital status, parity, and gynecological problems were significant predictors of SLEs, while occupation was not.

Age was found to be a significant positive predictor of SRRS score ($p < .001$). Specifically, for each one-unit increase in age, participants were 1.031 times more likely to be in a higher category of SLEs (OR = 1.036, 95% CI [1.025, 1.047]). Education also played a key role, as women with lower education levels (illiterate, primary, intermediate, and secondary) had a higher likelihood of falling into a greater SLE category compared to those with higher education. (OR = 1.714, 95% CI [1.222, 2.403]), (OR = 1.459, 95% CI [1.092, 1.948]), (OR = 1.018, 95% CI [0.724, 1.432]) respectively.

Residency had a negative relationship with stress levels, with suburban (OR = 0.368, 95% CI [0.242, 0.558]) and urban women (OR = 0.653, 95% CI [0.446, 0.957]) experiencing lower SRRS scores than rural women. Family type was a significant predictor ($p < .001$), with women in nuclear families having greater odds of high SRRS scores than those in extended families (OR = 1.348, 95% CI [1.070, 1.699]).

This may indicate that extended family support helps reduce stress levels.

Marital status showed that unmarried (OR = 0.262, 95% CI [0.103, 0.665]), married (OR = 0.473, 95% CI [0.252, 0.890]), and widowed women (OR = 0.699, 95% CI [0.345, 1.419]) had lower odds of experiencing high stress compared to divorced women, who had the highest SRRS scores. Widowed women showed no significant difference ($p = .322$).

Parity also influenced stress levels, with nulliparous (OR = 0.519, 95% CI [0.347, 0.777]) and primiparous women (OR = 0.435, 95% CI [0.305, 0.618]) having lower odds of high SRRS scores compared to grand multipara women. In contrast, multiparous women had a greater likelihood of experiencing SLEs. (OR = 1.261, 95% CI [1.000, 1.589]).

Additionally, gynecological problems were a strong predictor ($p < .001$), with affected women being 1.6 times more likely to have higher SRRS scores than those without such conditions (OR = 1.601, 95% CI [1.209, 2.121]).

Discussion

This study examined the prevalence of stressful life events (SLEs) among Kurdish women and their association with sociodemographic and obstetrical characteristics. The majority of participants reported experiencing SLEs in the past 12 months, with personal injury or illness being the most common, followed by death of a close family member, marriage, job loss, marital separation, and other life changes.

The findings of the present research revealed a vast majority of SLEs among women in the Kurdistan region that is echo of Bogulski et al. (2022)'s findings, where more than three-fourths of the participants had encountered at least one stressful life event. Furthermore, results of this study indicated a high prevalence of two SLEs; personal injury or illness and death of a close family member in agreement with Sagaltici et al. (2020) who reported a loss of family member was the most frequent type of trauma among study sample. Interestingly, results of this study are congruent with findings of Tibubos et al. (2021) who found that the majority of participants had experienced the death of a close family member, personal injury or illness, and marriage.

Logistic regression analysis showed that age, lower education, rural residency, nuclear family structure, divorce, grand multiparity, and gynecological problems were significant predictors of high

SLE scores. These high scores may result from either a few severe stressors or the cumulative effect of multiple life events. Additionally, the strong association between low education and higher SLE prevalence supports findings by Burns et al. (2015) A possible explanation is that education improves ways of coping and handling stress (Rubio et al., 2016).

This study found a positive association between age and SLEs, aligning with research suggesting that older individuals face more stressors such as loss of loved ones, retirement, illness, and financial difficulties (Herrera & Fernández, 2020). Additionally, illiterate and less educated women experienced a higher prevalence of stressors than those with higher education, highlighting the role of education in stress management (Anderson, et al., 2022). Women with higher levels of education tend to practice healthier behaviors (Li & Powdthavee, 2015). Higher education enhances coping strategies, reducing the likelihood of high SRRS scores, a finding supported by previous studies (Anderson et al., 2022; Tran et al., 2021; Burke et al., 2017).

This study found that women in rural areas experienced more SLEs than those in urban or suburban areas, a relationship that was statistically significant. These findings align with Mah et al. (2022) who reported higher psychological distress among rural women due to limited resources, isolation, and economic hardships. However, researchers in another study did not find a significant association between residence and SLEs (Tiwari & Deshpande, 2020).

The present study found that divorced women had the highest stress levels, while unmarried, married, and widowed women had lower odds of experiencing high stress. The result suggests that divorce may be a significant stressor, potentially due to emotional distress, financial instability, or social challenges. However, findings in the literature vary, with some studies reporting higher stress levels among unmarried women, while others found no significant relationship between marital status and stress (Burns et al., 2015; Shrout, 2021; Sun et al., 2021; Servatyari et al., 2021).

An important finding of the current research was the significant relation between family type and the SRRS score, women who lived within a nuclear family have a higher level of stress compared to women who lived with an extended family. This may be due to reduced social support and greater childcare and household responsibilities in nuclear family settings (Härkönen et al., 2017).

This study found that nulliparous and primiparous women experienced lower stress levels than grand multiparous women, likely due to increased caregiving and financial burdens. This contrasts with a Spanish study reporting that stress decreases with more children (Awad-Sirhan et al., 2022). However, this finding appears to contradict previous research by García-Fernández et al. (2022) which reported that primigravida and multiparous women had similar levels of stress.

The relationship between gynecological problems and SLEs is a significant finding of the current study, indicating that women with gynecological issues are more likely to experience higher stress levels. This can be attributed to the impairments in social, occupational, and personal functioning associated with gynecological conditions (Lal, 2017). Despite evidence of this link, the psychological aspects of gynecological conditions remain understudied (Bryant et al., 2014).

Several studies, including Tibubos et al. (2021), Moya-Higueras et al. (2020), and Pries et al. (2020), have reported that stressful life events (SLEs) can impact mental and physical well-being. Additionally, there is conclusive evidence to suggest that women with mental health issues may be more susceptible to gynecological problems. For example, recent research from China found that SLEs can cause abnormal vaginal bleeding (Zheng et al., 2020). Another study from Georgia reported that women who experienced several SLEs had a higher prevalence of preterm birth compared to those who had none (Stanhope & Hogue, 2020).

Conclusion

The prevalence of SLEs among Kurdish women in the Kurdistan Region is high, with personal injury, death of a close family member, and marriage being the most common events. Several socio-demographic and obstetric factors, including age, education, residency, family type, marital status, parity, and gynecological problems, significantly influence stress levels. SLEs were most prevalent among older, less educated, rural, nuclear family, divorced, grand multiparous women, and those with gynecological problems. The study highlights the need for stress screening, awareness campaigns, and further research to better understand and address the impact of SLEs on women's well-being.

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